

**AMENDMENTS TO THE ABSTRACT**

Please amend the Abstract as follows:

**ABSTRACT:**

**FUNCTIONALISED SURFACE SENSING APPARATUS AND METHODS**

~~This invention is generally concerned with sensing techniques based upon evanescent wave cavity ring down spectroscopy (CRDS), with particular reference to functionalising a sensing surface with the aim of increasing specificity and/or sensitivity.~~

~~An evanescent wave cavity-based optical sensor is described. The sensor comprises an optical cavity formed by a pair of highly reflective surfaces such that light within said cavity makes a plurality of passes between said surfaces, an optical path between said surfaces including a reflection from a totally internally reflecting (TIR) surface, said reflection from said TIR surface generating an evanescent wave to provide a sensing function; a light source to inject light into said cavity; and a detector to detect a light level within said cavity; and wherein said TIR surface is provided with a functionalising material over at least part of said TIR surface such that said evanescent wave interacts with said material; whereby an interaction between said functionalising material and a target to be sensed is detectable as a change in absorption of said evanescent wave. Preferably the TIR surface has substantially no features with a dimension perpendicular to the surface of greater than 3µm, more preferably 1µm.~~

We describe an evanescent wave cavity-based optical sensor. The sensor comprises an optical cavity formed by a pair of highly reflective surfaces and including a totally internally reflecting (TIR) surface generating an evanescent wave to provide a sensing function. The TIR surface is provided with a functionalising material over at least part of said TIR surface such that said evanescent wave interacts with said material, and whereby an interaction between said functionalising material and a target to be sensed is detectable as a change in absorption of said evanescent wave. The technique is extremely sensitive and thus in a gas sensor the evanescent wave TIR surface is provided with a solvating medium, and in other configurations a partition or atrium is provided for the evanescent wave sensing region.